

Love at first bite

Dawn H Gouge

Cimex lectularius



2001 Navajo Nation 1 of 3 sites

School dorm
beds sprayed
with diazinon
weekly



EPA
registration
loss for in-home
diazinon for
use 2004



- Bed bug cases noticeably increased in AZ in 2007
- Over-use and abuse of retail pesticides and other chemicals increasingly evident
- 2007-2011 data from individuals calling by phone, sending written correspondence, or attending educational / outreach events



MARICOPA COUNTY – 300% INCREASE BETWEEN 2008-2010



- Most commonly used pesticide choices for residents battling bed bugs was **total release foggers, & aerosol sprays**
- 9% of residents had applied gasoline on their bed
- 19% of people had attempted non-chemical interventions
- 31% had used more than two chemicals



People do not understand that killing the bugs they see doesn't help



- 42% people understand what behaviors put them at risk
- 89% indicated extreme stress, 100% indicated some anxiety
- 4.5% of residents attempted to seal cracks and crevices
- 8.9% had paid a company to remediate the infestation



- Few ($>7\%$) people had no concerns when informed of average remediation costs
- 32% of specimens submitted as bed bugs or possible bed bugs were not bed bugs

\$400-5000



1. Fumigation
2. Heat treatments
3. Pesticides

Common bed bug treatments

- Multiple applications of insecticides
- Crack and crevice applications
- Resistance to pyrethroid products is very high
- Not all populations are resistant to the same products
- Two general types of resistance occurring



Due to increasing resistance problems non-chemical treatment options are emerging as industry standards



The poor are
at greatest risk

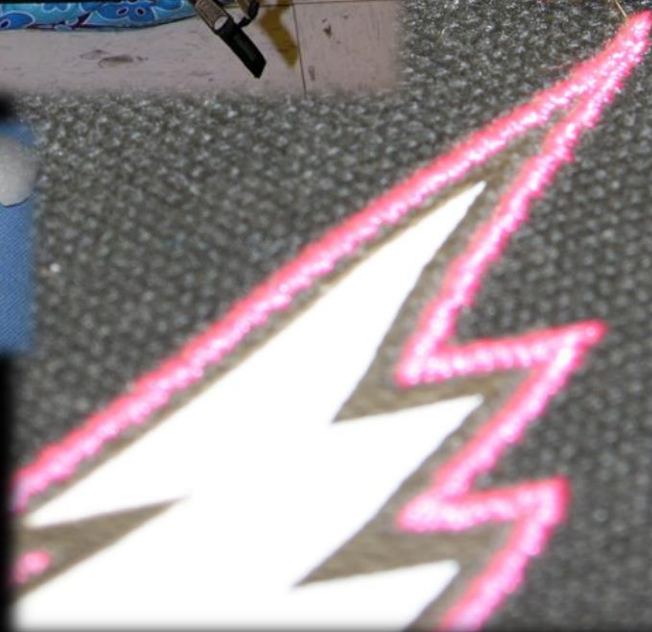
Increased number of
people reporting long-
term (beyond a year)
bed bugs



Socioeconomic risk







- Over the counter pesticides used in/on school backpacks
- Children missing school for more than 6 months
- Psychiatric patients refused admission to medical facilities
- Isolation from friends and family
- Bed bug detection dogs providing false positives



- Excellent detectors
- Can distinguish between live and dead bugs
- Good for lawsuit defense
- Expensive and require constant training
- Are only as good as their handler

Canine detection



- Training differs
- Verification differs
- Few third party certifications



Loss of:

- Home and/or belongings
- Financial stability
- Mental stability
- Partner
- Employment
- Children?



In 2012 we developed an on-line survey tool to methodically determine bed bug impacts and analyze the behavioral risk factors associated with bed bug infestations

2014 launch

Bed Bug survey in English:

<http://www.surveymonkey.com/s/DGLQS52>

Bed Bug survey in Spanish:

<https://es.surveymonkey.com/s/F5NZXJK>



Maybe?



- Other observations

Doctors and PA's diagnose bed bugs based on bite reactions

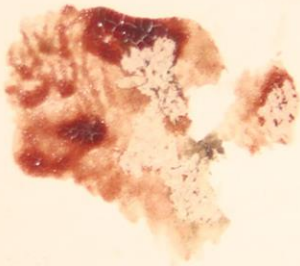


**Elderly and
disabled are at
risk**



Blood

**Smash
and
drag**





Non chemical methods

- **Becoming the primary methods used in combination with chemical methods**
 - Heat/Cold
 - Vacuuming
 - Mattress encasements
 - Desiccant dusts
 - Other



- Most companies provide preparation instructions
- Instructions make treatments easier for PMP
- Difficult for the resident: laundry bill
- Top complaint is lack of tenant cooperation

Treatment preparations



New way of thinking!
Leave the infestation
in place

Heat kills bed bugs best of all!

- Items can be placed in a hot dryer dry for 40 minutes after items are dry
- Washing only, does not kill bed bugs
- Heat box for books, etc.



Residents need
to know that
showering
removes bugs
from your
person



Mattress covers

- Encasements for both mattress and **box springs!**
- Improved version has a zipper protector sewn in
- Traps bed bugs and eggs, bite proof and escape proof



Not all covers protect



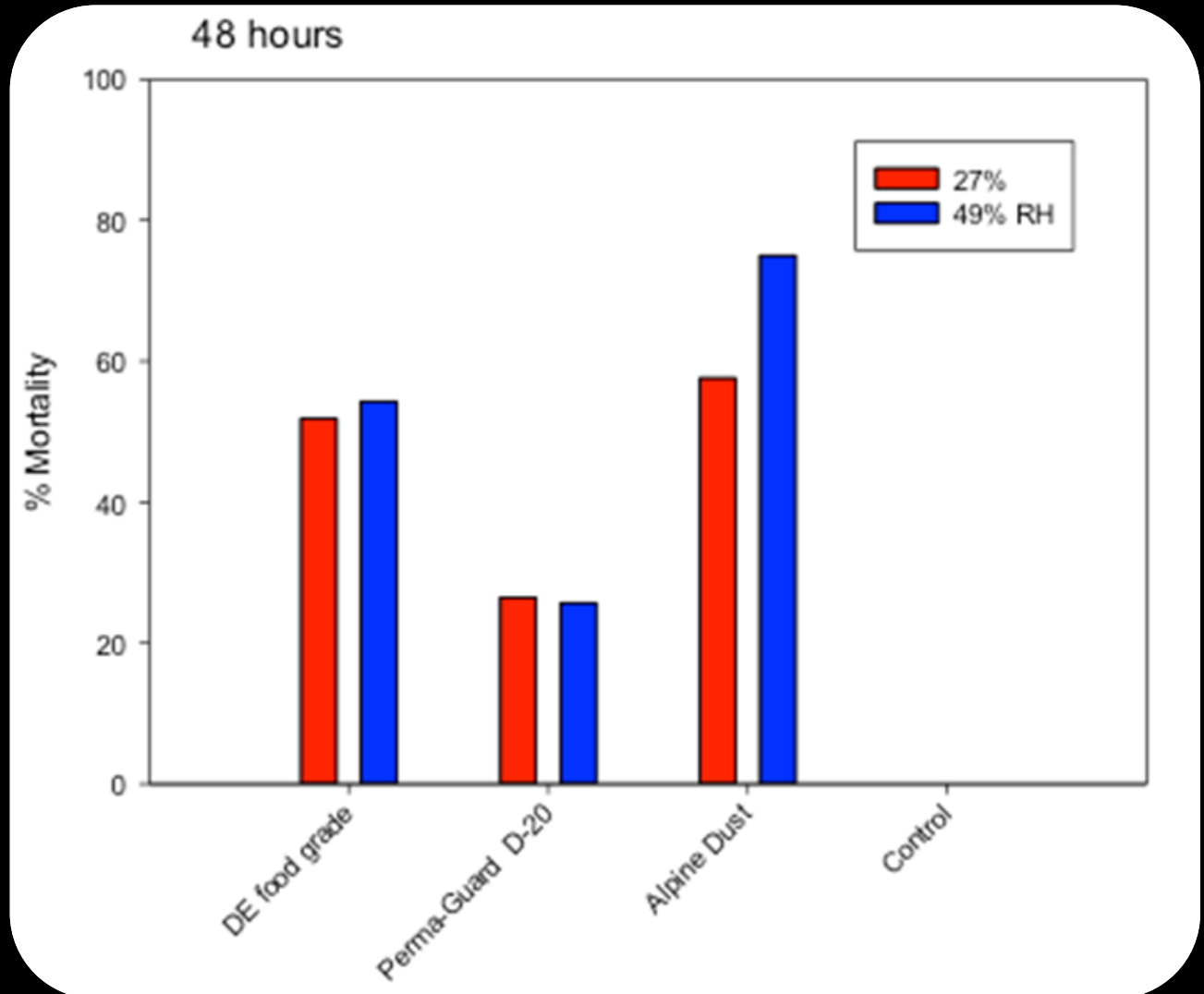
Desiccant dusts

- Desiccant dusts are ultimately more effective than sprays
- Resistant strain died in ~36 hours
- Diatomaceous Earth
 - insecticide grade 2-3 days
- Silica dust
 - 2-3 days
- Lasts unchanged in wall voids for years in low humidity

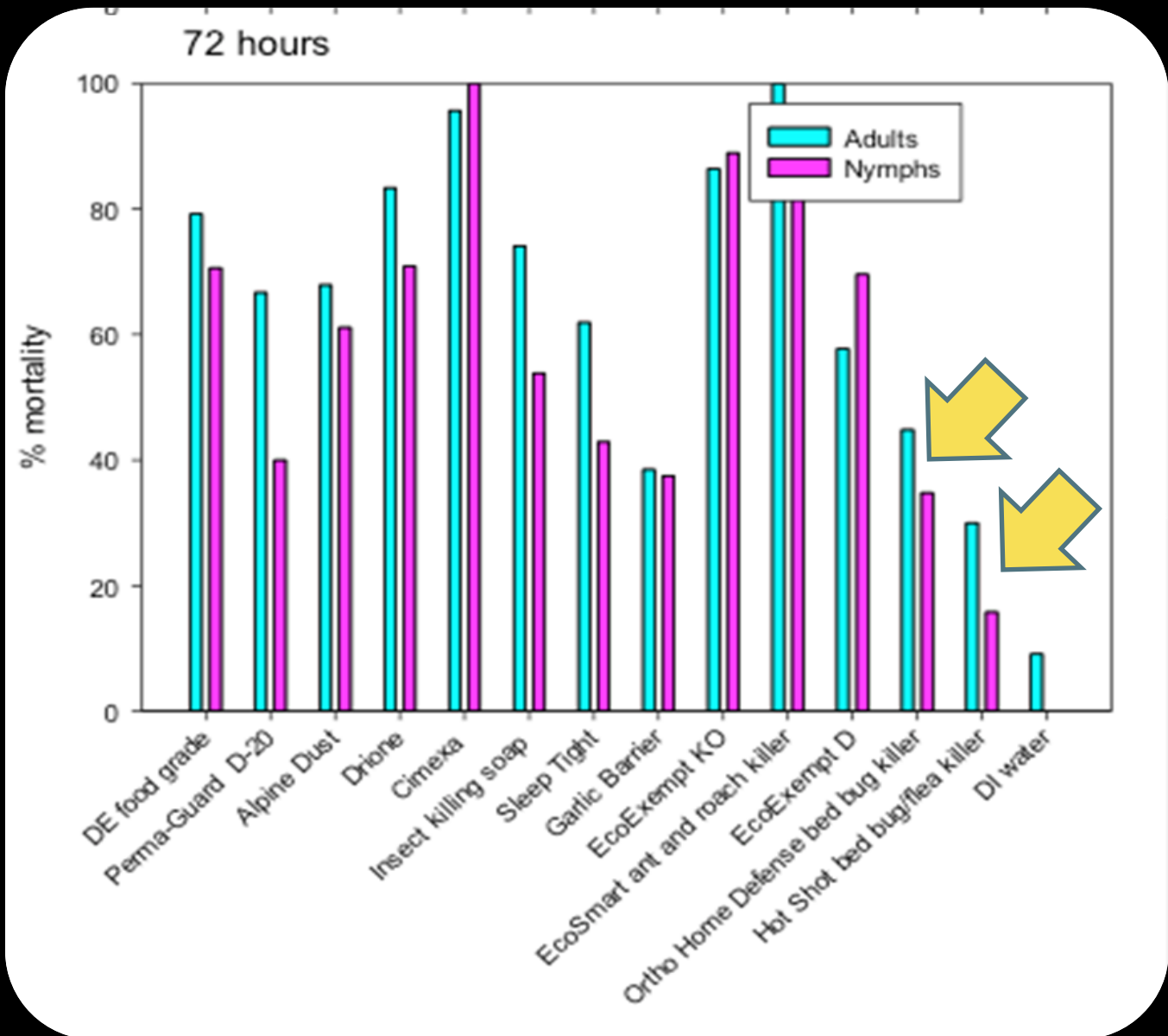


Desiccant dusts

Best
So far



DIY stores are not helping



UNHAPPY BED BUGS

- Schools **usually** lack a food source at night
- Boarding schools are the exception
- Backpacks, books, clothing, wheelchairs from home provide harborage and transport
- Schools can be transitional locations

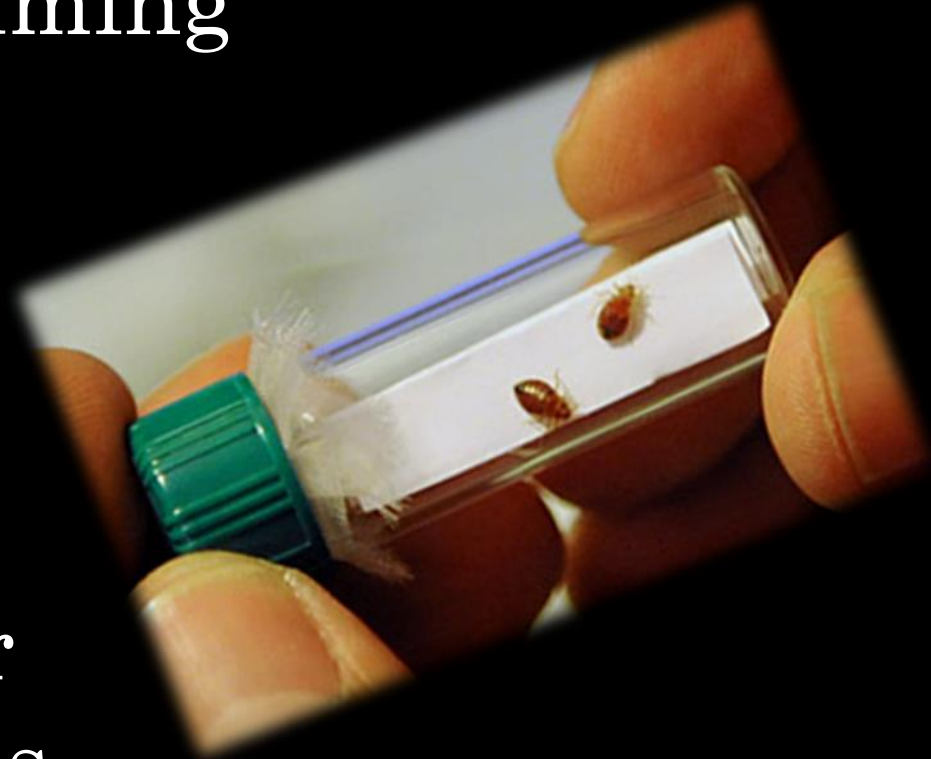




- In-school transfer does occur



- Accurately identify all specimens
- Notify all parents of kids in the room
- Provide basic information
- Inspect room, monitor, careful cleaning and vacuuming
- Reduce clutter
- Isolate student belongings in clear plastic bags
- Usually no need for residual insecticides



Children missing school

Faculty and staff losing their jobs

Affected
families
move homes
and schools

Extreme
chemical use



- School nurses – look for bites on arms, face, hands, legs, skin exposed while sleeping
- Ask questions gently
- Do not send students home



Bed bug prevention in school

- The school community should be notified about bed bug sightings and offered resources
- Belongings of students should be separated as a matter of policy
- Use ziplock bags and storage containers for belongings
- This is not easy – but it is reality



Parents

- Inform parents how to send students to school free of bugs
 - Launder clothes, dry heat for shoes, backpacks, etc.
 - Clothing items stored separated from bed bug areas in airtight bags



Phoenix union high school district

- Policy 2012-2013 school year
- 2013-2014 >75% reduction in roving bed bug sightings
- Cleaning and monitoring not “spraying”



Bed bugs everywhere not just homes

- Medical
- Cinemas
- Libraries
- Elder/disabled care
- Cinemas/theatres
- Retail outlets
- Transportation
- Schools/childcare



Overwhelming need for community education



CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People.™

A-Z Index: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z #

Parasites - Bed Bugs

Bed Bugs
Frequently Asked Questions (FAQs)
Biology
Resources for Health Professionals
Publications
Additional Resources

Parasites Home
Recommend 25 Tweet Share



Bed bugs, a problem worldwide, are resurging, causing property loss, expense, and inconvenience. The good news is that bed bugs do not transmit disease. The best way to prevent bed bugs is regular inspection for signs of an infestation.

Image: Bed bugs hiding in the ribbing of a mattress corner.

Related Links
Parasites A-Z Index
Parasites Glossary
Neglected Tropical Diseases
Laboratory Diagnostic Assistance [DPDX]

Explore
Frequently Asked Questions
Most common questions answered...
Biology
Stages of parasite development...
Publications
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Contact Us:
Centers for Disease Control and Prevention
1600 Clifton Rd
Atlanta, GA 30333
1-800-CDC-INFO
(800-232-6242)
TTY: (888) 282-8769
Hours: 9am-5pm, Monday-Friday, Closed on holidays

Page last reviewed: November 2, 2010
Page last updated: November 2, 2010
Content source: Global Health - Division of Parasitic Diseases and Malaria

ARIZONA COOPERATIVE EXTENSION
AZ1563

ARIZONA PEST MANAGEMENT CENTER

WORKING THE BUGS OUT

Bed Bug Control—What Landlords and Tenants in Multi-Family Housing Need to Know in Arizona

Dawn H. Gouge, Carl Olson, Al Fournier & Paul Baker

May 2012



LANDLORDS

- Shall not enter into a lease agreement if an apartment is known to be infested with bed bugs.
- Shall provide educational materials on bed bugs to tenants.
- Also in statute ARS 32-2325 (1) and (2) to do structural pest control, a person must have a business license and qualifying party license, or be a licensed pest management professional employed by a company with a business license and qualifying party license. Employees of political subdivisions (e.g. City municipality workers) need only hold an applicator license, and are not required to meet the business license and qualifying party license requirements. Thus, the additional requirement that the Landlord shall utilize only licensed Pest Management Professionals to remediate infestations.

Landlords should consider having a clearly written Bed Bug Protocol included within lease agreements.



Summary of the Arizona law

- TENANTS** are required to notify landlords in writing or electronically of the presence of bed bugs.
- TENANTS** are prohibited from moving items into the building if they are known to be infested with bed bugs.
- LANDLORDS** Landlords are required to provide educational materials on bed bugs to existing and new tenants.
- LANDLORDS** are prohibited from renting homes known to have active bed bug infestations.

The Arizona bed bug legislation can be read at: https://www.azleg.gov/FormatDocument.aspx?InDoc=legtext/50leg/1e/laws/0191.htm&Session_ID=102
Reflected in statute titles 33-1319; 11-269.11; 9-500.31; 36-601

General pest management service contracts may not include bed bug remediation. It may be advisable to hire an experienced Pest Management Professional to manage properties you are responsible for and to verify there are no bed bugs in recently vacated homes. If you have a bed bug detection dog service, you may want to confirm that the dog service is properly trained and certified by WMA.